

SPECIFICATION

Title of the invention

Cover panel unit for refrigerator

BACKGROUND OF THE INVENTION

This application claims the benefit of Japanese Application Number 2003-272460 filed 07/09/2003, the entirety of which is incorporated by reference.

Field of the invention

The present invention relates to a cover panel unit provided such that it covers the front of a refrigerator.

Description of the related art

A cover panel unit is often provided at the front of a refrigerator for a purpose of improving an appearance thereof or obtaining a new design. A conventional cover panel unit has a door panel which is formed integrally. In order to provide the door panel with a refrigerator, these steps used to be required; (1) a grip has to be previously detached from a door of the refrigerator, (2) the door panel is attached to the door, (3) the grip is attached with a screw again. (for example, Japanese Unexamined Patent (Kokai) Publication No. 6(1994)-238048)

However, in the conventional cover unit, a grip has to be once detached before a replacement and should be attached

thereafter in case a replacement of a door panel is required due to a stain or a scar. However, it takes time and labor to detach the door panel and then attach the same, which can be a problem.

An object of the present invention is to overcome the above problem and to provide a cover panel unit for a refrigerator in which replacement of a door panel covering the front of the refrigerator is easily conducted.

SUMMARY OF THE INVENTION

The configuration according to a first aspect among configurations of the present invention, is a cover panel unit for a refrigerator provided for covering the front of the refrigerator comprising a pair of lateral side panels for covering the left and right sides of a door, and a front panel for covering the front of the door being engaged with the lateral side panels, wherein a grip of the door is fixed integrally with one of the lateral side panels.

According to a second aspect of the present invention, there is provided a cover panel unit for a refrigerator according to the first aspect, wherein each of the lateral side panels has guide grooves facing to each other at the front thereof, and the front panel is provided for covering the front of the door being engaged with the guide grooves.

According to a third aspect of the present invention, there

is provided a cover panel unit for a refrigerator according to the first aspect, wherein each of the lateral side panels has portions abutting on the front, the lateral sides and the back of the door, so that a cross sectional view thereof is open box shaped.

According to a fourth aspect of the present invention, there is provided a cover panel unit for a refrigerator according to the first aspect, wherein the front panel is provided at the front of the door with a foam resin sheet inserted therebetween.

In a cover panel unit for a refrigerator according to the first aspect, replacement of the front panel is easily conducted without attaching or detaching the grip when the front panel has a stain or a scar.

In a cover panel unit for a refrigerator according to the second aspect, replacement of the front panel is easily conducted by sliding the same along the guide groove.

In a cover panel unit for a refrigerator according to the third aspect, it is possible to mount fixedly the lateral side panels on the door of the refrigerator even when they are used for a long time. As a result, the lateral side panels do not be displaced or detached.

In a cover panel unit for a refrigerator according to the fourth aspect, the front panel can be stable in the guide groove.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is an explanatory view of a refrigerator before attaching a cover panel unit.

Fig. 2 is an explanatory view of a refrigerator after attaching a cover panel unit.

Fig. 3 is an explanatory view showing a condition that a right door cover unit is detached from the right door.

Fig. 4 is an explanatory view showing an inner side panel.

Fig. 5 is an explanatory view showing a condition (seen from the top) that an outer side panel and an inner side panel are attached to the right door.

Fig. 6 is an explanatory view showing a condition (seen from the top) that a front panel is attached to the right door.

Fig. 7 is an explanatory view showing an upper edge of the right side of the right door with an upper side panel attached.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

An embodiment of a cover panel unit for a refrigerator according to the present invention will be described in detail below with reference to the figures.

Fig. 1 shows a refrigerator before attaching a cover panel unit. A refrigerator 21 has a main body 22 with a right door and a left door which are mounted at the front of the main body. The right door and the left door are pivotally fixed

around an outer edge by hinges 25, 25 so that it is capable of opening and closing in one direction. (It should be noted that Fig. 1 shows a right door 23 and a left door 24 without a grip.) In addition, at a slight inner portion of the periphery of the right door 23 and the left door 24 (which faces to the main body 22), an adhesive maintenance member (not shown) is mounted for maintaining a desirable adherence to the main body 22. There is a small clearance between the main body 22, and the periphery of the right door 23 and the left door 24.

Fig. 2 shows a refrigerator with a cover panel unit attached. A cover panel 1 is constituted of a right door cover unit U1 for covering a right door 23 and a left door cover unit U2 for covering a left door 24. The right door cover unit U1 comprises an outer side panel 2a which serves as a side panel for covering an outer side of the right door 23, an inner side panel 3a which serves as a side panel for covering an inner side of the right door 23, an upper side panel 4a for covering the upper side of the right door 23, a bottom side panel 5a for covering the bottom side of the right door 23 and a front panel 6a for covering the front side of the right door 23. The left door cover unit U2 comprises an outer side panel 2b for covering an outer side of the left door 24, an inner side panel 3b for covering an inner side of the left door 24, an

upper side panel 4b for covering the upper side of the left door 24, a bottom side panel 5b for covering the bottom side of the left door 24 and a front panel 6b for covering the front side of the left door 24. It should be noted that the outer side panel 2b, the inner side panel 3b, the upper side panel 4b and the bottom side panel 5b of the left door cover unit U2 are corresponding to the outer side panel 2a, the inner side panel 3a, the upper side panel 4a and the bottom side panel 5a of the right cover unit respectively. That is, they are symmetrical and have the same basic configuration. Therefore, only the right door cover unit U1 will be explained.

Fig. 3 shows a condition of attaching the right door cover unit U1 to the right door 23. The outer side panel 2a is integrated in a shape of a plate made of metal (aluminum) with a height slightly higher than the right door 23. A front abutment portion 8 and a back abutment portion 9 are provided such that they are perpendicular to an outer abutment plate 7 at the front and back edge of the outer abutment plate 7 which abuts the outer side of the right door 23. A plurality of screw holes 11, 11... are worn at the front abutment portion 8 along the longitudinal direction. A guide portion 10 is provided at the front of the front abutment portion 8 along the longitudinal direction thereof perpendicularly. The guide portion 10 and the front abutment portion 8 constitute

a guide groove 38. A screw hole 32 is provided for threadably attaching the upper side panel 4a at the base of the upper end of the front abutment portion 8. This outer side panel 2a is attached to cover the outer side of the right door 23 by inserting the outer edge of the right door 23 between the front abutment portion 8 and the back abutment portion 9 and then threadably attaching the wearing portion of the screw holes 11, 11...to the front of the right door 23. When the outer side panel 2a is thus attached, the inner portion of the front abutment portion 8 abuts the front of the right door 23 and the inner portion of the back abutment portion 9 abuts the back of the right door 23.

Similar to the outer side panel 2a, the inner side panel 3a is integrated in a shape of a plate made of metal (aluminum) with a height slightly higher than the right door 23. A front abutment portion 13 and a back abutment portion 14 are provided such that they are perpendicular to an inner abutment plate 12 at the front and back edge of the inner abutment plate 12 which abuts the inner side of the right door 23. Fig. 4 shows the left side of the inner side panel 3a. Two screw holes 15, 15... are worn respectively at slightly lower portion than the upper end, around the center and slightly upper portion than the bottom end of the inner abutment portion 12 aligning horizontally. At the front of the front abutment portion 13,

a grip holding portion 36 which is in a flat shape is provided being parallel to the front abutment portion 13. A grip 37 is integrally provided to the grip holding portion 36. It should be noted that the height of the grip 37 is slightly higher than the right door 23. A guide portion 20 is provided at the inner side of the grip holding portion 36 along the longitudinal direction of the front abutment portion 13 perpendicularly. The guide portion 20 and the grip holding portion 36 constitute a guide groove 39. This inner side panel 3a is attached to cover the inner side of the right door 23 by inserting the inner edge of the right door 23 between the front abutment portion 13 and the back abutment portion 14 and then threadably attaching the wearing portion of the screw holes 15, 15...to the inner side of the right door 23. When the inner side panel 3a is thus attached, the inner portion of the front abutment portion 13 abuts the front of the right door 23 and the inner portion of the back abutment portion 14 abuts the back of the right door 23. Fig. 5 shows the condition of attaching the outer side panel 2a and the inner side panel 3a to the right door 23.

The bottom side panel 5a is integrated by metal (aluminum) into a flat panel. A front abutment portion 17 and side abutment portions 18, 18 are provided perpendicularly to a bottom abutment plate 16 at the front and both lateral edges

of the bottom abutment plate 16 which abuts the bottom of the right door 23. Screw holes 19, 19... are worn respectively at the bottom abutment portion 16 aligning in the direction of lateral side. This bottom side panel 5a is attached to cover the bottom of the right door 23 by threadably attaching the wearing portion of the screw holes 19, 19... which are worn through the bottom abutment plate 16, to the bottom of the right door 23.

The front panel 6a is integrated by metal (stainless steel) into a rectangular plate with a height slightly higher than the right door 23. The front panel 6a is attached to the front of the right door 23 with the left and right edges engaged with a guide groove 39 of the inner side panel 3a and a guide groove 38 of the outer side panel 2a respectively. Fig. 6 shows a condition of attaching the front panel 6a. When the front panel 6a is attached to the front of the right door 23, urethane foam mats 31, 31 are adhered to the front of the right door 23 to be inserted between the front panel 6a and the right door 23.

The upper side panel 4a is made of synthetic resin formed into a box in which the center of the substrate 33 is caved in downward. At a front edge of the outer side of the substrate 33, a protrude portion 34 is formed having a screw hole 35 at slightly inner portion than the top thereof. This upper

side panel 4a is attached to cover the upper portion of the right door 23 with the cave-in portion of the substrate 33 abutted on the upper portion of the right door 23, by threadably attaching the wearing portion of the screw hole 35 of the protrude portion 34 to the wearing portion of the screw hole 32 of the outer side panel 2a. When the upper side panel 4a is thus attached, the cave-in portion of the substrate 33 abuts the upper portion of the right door 23. Fig. 7 shows a top portion of the right side of the right door 23 with the upper side panel 4a attached. When the upper side panel 4a is attached to the right door 23, the bottom surface of the right edge of the protrude portion 34 abuts the upper surface of the outer side panel 2a and the bottom surface of the left edge of the substrate 33 abuts the upper surface of the inner side panel 3a. The upper edge of the front panel 6a is positioned more inwardly than the front edge of the substrate 33.

The components of the right door cover unit U1, that is, the outer side panel 2a, the inner side panel 3a, the upper side panel 4a, the bottom side panel 5a and the front panel 6a, are attached to the right door 23 in the above-described manner. On this account, it is unnecessary to detach the right door 23 from the main body 22 when attaching the right door cover unit U1. When the outer side panel 2a, the inner side

panel 3a, the upper side panel 4a, the bottom side panel 5a and the front panel 6a are attached to the right door 23, the front side of the guide portion 10 of the outer side panel 2a, the front side of the grip holding portion of the inner side panel 3a, the front side of the substrate 33 of the upper side panel 4a, the front side of the front abutment portion 17 of the bottom side panel 5a are flush with each other. Further, the outer side panel 2a, the inner side panel 3a and the front panel 6a are formed to be slightly higher than the right door 23. Whereby, hinges 25, 25..., which are located over the right door 23, do not appear from a front side view.

Similarly, when attaching the components of the left door cover unit U2, that is, the outer side panel 2b, the inner side panel 3b, the upper side panel 4b, the bottom side panel 5b and the front panel 6b, it is unnecessary to detach the left door 24 from the main body 22. When the outer side panel 2b, the inner side panel 3b, the upper side panel 4b, the bottom side panel 5b and the front panel 6b are attached to the left door 24, the front side of the guide portion 10 of the outer side panel 2b, the front side of the grip holding portion 36 of the inner side panel 3b, the front side of the substrate 33 of the upper side panel 4b, the front side of the front abutment portion 17 of the bottom side panel 5b are flush with each other. Further, the outer side panel 2b, the inner side

panel 3b and the front panel 6b are formed to be slightly higher than the left door 24. Whereby, hinges 25, 25..., which are located over the left door 24, do not appear from a front side view.

According to the above, the cover panel unit 1 is attached in order to cover the front, the outer and inner sides, the upper and bottom sides composing the right door 23 and the left door 24 of the refrigerator 21. Owing to this, it is possible to improve an appearance of the refrigerator or obtain a new design. In addition, the outer side panel 2a, the inner side panel 3a and the front panel 6a are formed to be slightly higher than the right door 23, and likewise, the outer side panel 2b, the inner side panel 3b and the front panel 6b are formed to be slightly higher than the left door 24. This enables the refrigerator to look much larger.

The cover panel unit 1 includes the outer side panel 2a and the inner side panel 3a which cover the right and left sides of the right door 23, the outer side panel 2b and the inner side panel 3b which cover the right and left sides of the left door 24, the front panel 6a which covers the front of the right door 23 being engaged with the outer side panel 2a and the inner side panel 3a, and the front panel 6b which covers the front of the left door 24 being engaged with the outer side panel 2b and the inner side panel 3b. The grips

37, 37 are fixed to the inner side panel 3a and 3b respectively. Because of this, when the front panel 6a and 6b has a stain or a scar, they can be easily detached without detaching and attaching the grips 37, 37. In addition, as each of the components has a small weight, it is easy to attach the cover panel unit to the refrigerator by only one person in a short time.

In the cover panel unit 1, guide grooves 38 and 39 are provided facing to each other at the front of the outer side panel 2a and the inner side panel 3a while guide grooves 38 and 39 are provided facing to each other at the front of the outer side panel 2b and the inner side panel 3b, and the front panels 6a and 6b are provided for covering the front of the right door 23 and the left door 24 being engaged with the guide grooves 38 and 39. Accordingly, a replacement of the front panels 6a, 6b is easily conducted by sliding the same along the guide grooves 38, 39 after detaching two upper side panels 4a, 4b. In addition, since a process, such as a roll processing on the edge of the front panels 6a, 6b, is unnecessary in manufacturing, a warp or a bend of the front panels 6a, 6b can be prevented.

In the cover panel unit 1, each of the outer side panels 2a, 2b and the inner side panels 3a, 3b have portions abutting to the front, the lateral sides and the back of the right door

23 and the left door 24 respectively, so that a cross sectional view thereof is open box shaped. Accordingly, it is possible to mount fixedly the outer side panels 2a, 2b and the inner side panels 3a, 3b on the right door 23 and the left door 24. As a result, even when the cover unit is used for a long time, the outer side panels 2a, 2b and the inner side panels 3a, 3b can not be displaced or detached from the right door 23 and the left door 24.

In the cover panel unit 1, the front panels 6a, 6b are provided at the front of the right door 23 and the left door 24 with a urethane foam mat 31 inserted therebetween. Accordingly, the front panels 6a, 6b can be stable in the guide grooves 38, 39. In addition, when the right door 23 and the left door 24 are opened or closed roughly, an impact is absorbed by the urethane foam mats 31, 31 effectively. Therefore, a noise can be kept down.

The upper side panels 4a, 4b are formed into a box in which the center of the substrate 33 is caved in downward. These upper side panels 4a, 4b are attached to cover the upper portion of the front panels 6a, 6b by the substrate 33 with the bottom of the cave-in portion abutted on the upper portion of the right door 23 and the left door 24. This makes it possible to hold the front panels 6a, 6b fixedly even when the right door 23 and the left door 24 are opened or closed roughly.

In addition, as the front panels 4a, 4b are lightweight, even if the refrigerator is used for a long time the right door 23 and the left door 24 can be opened or closed smoothly.

It should be noted that the configuration of the cover panel unit according to the present invention is not limited to the above embodiment. That is, the configuration of the outer side panel, the inner side panel, the upper side panel, the bottom side panel and the front panel can be diversely modified according to the need without departing the scope of the present invention. Moreover, the shape of the refrigerator to which the cover panel unit of the present invention is attached is not limited at all to the above embodiment.

For example, a door of the refrigerator with the cover panel unit attached is not limited to be divided into the right and left sides, and it may be formed integrally or divided into the upper and lower parts. In addition, the materials of the panels which constitute the cover panel unit can be modified diversely according to the need. Moreover, a various kinds of panels such as colored, polished, frosted or processed on the surface, shining, for example, may be used as the cover panels.

This invention is preferably used as a cover panel unit provided such that it covers the front of a refrigerator.